Fw: CHEEC question

Bob Benson to: Hilbert, Timothy (hilbertj), eric.borton 01/24/2011 08:58 AM

From: Bob Benson/R8/USEPA/US
To: "Hilbert, Timothy (hilbertj)" <HILBERTJ@ucmail.uc.edu>, eric.borton@uc.edu

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See below.

Please verify that my calculations are correct and that this is the procedure used to calculate the CHEEC for each Marysville worker.

For each workers, there should be a multiplier for the total number of seasons (spring = x; Summer = y; Fall = z).

The equation in Section 5.3 (page 13) needs correction.

----- Forwarded by Bob Benson/R8/USEPA/US on 01/24/2011 08:53 AM -----

From: Bob Benson/R8/USEPA/US
To: Leonid Kopylev/DC/USEPA/US@EPA
Cc: Paul White/DC/USEPA/US@EPA, "Brattin, Bill" <brattin@srcinc.com>, Thomas Bateson/DC/USEPA/US@EPA, Krista Christensen/DC/USEPA/US@EPA
Date: 01/24/2011 08:49 AM
Subject: Re: CHEEC question

The equation to calculate CHEEC (cumulative human equivalent exposure concentration in fibers-yr/cc) in the UC report left out the factor to convert fibers/cc to fibers-yr/cc. The missing factor is the season duration for each of the 3 seasons. For Spring the duration factor is 5 mo/12 mo/yr; for summer the duration factor is 3 mo/12 mo/yr; for Fall the duration factor is 4 mo/12 mo/yr.

See the attached Excel spreadsheet for the calculation for the workers in Leonid's table.

Corrected CHEEC Calc.xlsx

Leonid Kopylev---01/20/2011 01:43:10 PM---Bob, before, there were very few workers with such issues, so I did let it go, but now, with 1980 da

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Date: 01/20/2011 01:43 PM
Subject: Re: CHEEC question

Bob,

before, there were very few workers with such issues, so I did let it go, but now, with 1980 data,
UC report (pp. 14-15) state that multipliers are 0.354782 for Spring, 0.302795 for Summer, 0.354215 for Fall,

and the procedure was

UC Procedure
CHEEC= Exposure Est year-dept-season 1 x Correction Factorseason 1 + Exposure Est year-dept-season 2 x Correction Factorseason 2 + ... Exposure Est year-dept-season x x Correction Factorseason x

so for the worker ID 10858, the CHEECH would be at least 0.01*(0.354782+0.302795+0.354215)=0.010, not 0.003 as before, given that duration is given as a year?

Leonid

Bob Benson---01/20/2011 03:33:41 PM---I will give the same answer to Leonid's question as I did before. The cumulative exposure for each w

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Date: 01/20/2011 03:33 PM
Subject: Re: CHEEC question

I will give the same answer to Leonid's question as I did before.

The cumulative exposure for each worker is adjusted to continuous exposure (24 hours/day, 7 days/week). All non-work time was given an exposure value of zero. Therefore, the calculated CHEEC values can be lower than the background level in the plant (0.01 - 0.02 fiber/cc) for those with short durations of employment.

For occupational studies the usual procedure is to adjust to continuous exposure using 10 m3/20 m3 x 5 days/7 days or 0.357. See the 1994 Inhalation Dosimetry document. This generic procedure can not be used for the Marysville cohort because some workers had extensive overtime work that varied with the season. See section 5 of the UC report.

Paul's also asked about the uniform start and stop dates.

UC had exact dates (month/day) of start and stop dates and transfers to another department within the facility for only about half of the individuals. For others the workers could only remember the season when they started work or transferred to another department within the facility. We decided to assign all dates to correspond to the seasons when the work schedules changed (Jan 1, June 1, or Sept 1). This is also explained in the UC report.

Paul White---01/20/2011 11:51:48 AM---The start and stop dates here look very uniform. Is that appropriate? From: Leonid Kopylev/DC/USEPA

From: Paul White/DC/USEPA/US
To: Leonid Kopylev/DC/USEPA/US@EPA
Cc: Bob Benson/R8/USEPA/US@EPA, "Brattin, Bill" <brattin@srcinc.com>, Thomas Bateson/DC/USEPA/US@EPA, Krista Christensen/DC/USEPA/US@EPA
Date: 01/20/2011 11:51 AM
Subject: Re: CHEECH question

The start and stop dates here look very uniform. Is that appropriate?

Leonid Kopylev---01/20/2011 01:11:29 PM---Bob, I asked similar question before, but here it is again. Below is few people with duration at lea

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Date: 01/20/11 01:11 PM
Subject: CHEECH question

Bob,

I asked similar question before, but here it is again. Below is few people with duration at least year from 1979 to 1980, when minimum exposure in JEM was 0.010
How it is possible that with duration at least year with minimum exposure 0.010, there CHEECH is lower than lowest JEM entry? They are not unique, I chose these
to understand

Thanks,
Leonid

ID	start	stop	dur	scan	latency	CHEECH		
10858	6/1/1979	6/1/1980	1.00	6/1/1980	1.00	0.003		
11621	6/1/1979	6/1/1980	1.00	6/1/1980	1.00	0.003		
19210	6/1/1979	6/1/1980	1.00	6/1/1980	1.00	0.003		
19720	6/1/1979	6/1/1980	1.00	6/1/1980	1.00	0.003		
12504	6/1/1979	6/1/1980	1.00	6/1/1980	1.00	0.008		
12647	1/1/1979	6/1/1980	1.42	6/1/1980	1.42	0.005		
19215	1/1/1979	6/1/1980	1.42	6/1/1980	1.42	0.005		